DRAFT Attachment F-WRD 10.06

Hazard Analysis Guidelines for Risk Factors 10-12, Heavy, Frequent, or Awkward Lifting

Department of Labor Industries
WISHA Services Division

This document will assist inspectors in reviewing work sites where caution zone jobs have been identified. The inspector does not have to evaluate every job, but can use the following strategy for representative sampling. Inspectors will use Appendix B of the rule (WAC 296-62-05174) to evaluate whether there are hazard zone jobs. However, the employer has the option to use an analysis tool other than Appendix B. Some acceptable methods of alternate analysis are identified with each risk factor; in cases where the employer is relying upon either a listed alternative or another alternative, the inspector will need to request that an ergonomist assist them in these inspections.

This appendix contains the following sections to assist inspectors in making their determinations:

- Typical clues to recognize Heavy, Frequent, or Awkward Lifting
- Typical jobs where the hazard zone job risk factors for Heavy, Frequent, or Awkward Lifting are found.
- Tips on measuring Heavy, Frequent, or Awkward Lifting
- Acceptable methods of hazard analysis when using the general approach
- Typical solutions chart
- Common questions for Heavy, Frequent, or Awkward Lifting

The caution zone criteria for Heavy, Frequent, or Awkward Lifting are:

- Lifting objects weighing more than 75 pounds once per workday or 55 or more pounds more than 10 times per workday
- Lifting objects weighing more than 10 pounds if done more than twice per minute for more than 2 hours total per workday
- Lifting objects weighing more than 25 pounds above the shoulders, below the knees or at arms length more than 25 times per workday

The hazard zone criteria for Heavy, Frequent, or Awkward Lifting risk factors under Appendix B (WAC 296-62-05174) are:

- Use the lifting analysis worksheet from Appendix B, to determine the hazard level.

Typical clues to recognize the risk factor: Heavy, Frequent, or Awkward Lifting

- Jobs where lifting is the major activity
- Lifting very heavy objects (above 90 lbs) from any starting location
- Lifting heavy objects (35-65 lbs) frequently, or from awkward locations (from the floor, from overhead, or while reaching out far from the body)
- Lifting moderately heavy objects (example, 10-50 lbs) very frequently, or from awkward locations (from the floor, from overhead, or reaching out from the body)

Typical jobs where Heavy, Frequent, or Awkward Lifting risk factors are often found:

Risk Factor	Typical Jobs
Heavy Lifting	• Construction (e.g., wallboard, roofing materials, pipe, re-bar, planks/wood)
Frequent Lifting	• Warehouse and Distribution Centers (loading unloading trucks or pallets, stocking shelves, order picking)
Awkward Lifting	• Nurses (patient lifting) • Furniture Movers • Airline Baggage Handlers • Garbage Collectors • Package Delivery • Laundry Services
Not covered	• Strength Training or Conditioning (example, for sports, firefighting rescues) (technical feasibility – heavy weight lifting is the only known way to build the required muscle mass)
Jobs for where the risk is better evaluated by other risk factors.	• Shoveling (Analyze for High Hand Force and/or Highly Repetitive Motion)

Tips on measuring Heavy, Frequent, or Awkward Lifting:

- Lifting: determine the weights of the objects lifted, and the approximate hand position when they are lifted (how high off the floor and how far out from the body)
- Lowering: counts the same as "lifting" -- determine the object weights and hand positions at the start of the lowering

- Picking up and putting down an object counts as either one lift or two lifts, as follows:
  Count as one lift – an object that is lifted and put down again in more-or-less one continuous motion (less than 3 steps taken or held less than 3 seconds)
  Count as two lifts – an object is picked up, carried/walked 3 or more steps (or held 3 or more seconds), and then put down again. Lift #1: picking up (lifting) the object. Lift #2: putting down (lowering) the object.
  (Note: if the worker more-or-less drops the object at the final location (doesn't have to be careful when putting it down) then just counts this as one lift (the initial lifting).

- If different object weights are lifted, from different hand positions, independently analyze 1) the most frequent lifting case (example, a typical lift), 2) the heaviest object, 3) the object lifted from the most awkward position. Evaluate the three cases independently.

Acceptable methods of hazard analysis for Heavy, Frequent, or Awkward Lifting (acknowledged by the general approach allowed within the rule):

- NIOSH Lifting Equation

Typical Solutions Chart for Heavy, Frequent, or Awkward Lifting:

Risk Factor	Typical Solution
Heavy Lifting	• Reduce weight of load • Increase weight of load so that it requires mechanical assist • Reduce the capacity of the container – reduces the overall weight lifted • Use mechanical assist such as overhead hoist, manipulator, vacuum lift, pneumatic balancer, forklift • Team lift the object with two or more workers
Frequent Lifting	• Use mechanical assist such as overhead hoist, manipulator, vacuum lift, pneumatic balancer, forklift • Reorganize work method to eliminate repeated handling of the same object • Rotate workers with jobs with light or no manual handling • Consider eliminating (restructuring) piece rate and incentive programs

Awkward Lifting	• Reduce the horizontal distance of the load away from the body by reducing the size of the packaging • Reduce the horizontal distance of the load away from the body by removing barriers, obstacles that make access to the object difficult • Redesign workstation layout to eliminate trunk twisting by locating objects within arm's reach • Design workstation with adjustable heights to eliminate bent forward posture when lifting • Eliminate the use of deep shelves that require a worker to bend and reach for objects • Store objects up off the floor (e.g. at approximately knee to waist height) • Provide sturdy walk-up ladder with handrails to access stored parts on high shelves/racks • Consider eliminating (restructuring) piece-rate and incentive programs, which encourage rapid movements and awkward postures • Provide handholds so boxes can be lifted with the hands in a better location
Not solutions	• Back belts (Not considered effective Personal Protective Equipment by L&I)

Commonly asked questions for Heavy, Frequent, or Awkward Lifting:

(1) When is a lift a lift, as opposed to sliding an object?

A lift is anytime that any portion of the weight of an object is supported against gravity. Therefore, if the employee tilts something up by picking it up from underneath to place a dolly or hand truck under it, then it would be a lift. If the employee pushes or pulls it from the top to tilt it up, then it would not be a lift. If the employee slides it without picking it up from underneath, then it is not a lift. If the employee grabs the loose fabric of a bag to pull it across the floor, the weight being lifted it of the fabric, not the contents. If the employee picks up one end of a more solid object and drags it across the floor, then the employee is lifting some portion of the weight of that object (usually about half of the weight, depending upon dimensions).

(2) Fire departments and possibly other types of employers provide exercise and weight lifting equipment for use during work time. Would weight lifting fall under "caution zone jobs" and WMSD hazard determinations?

No. Although on the job weight training may exceed caution zone and hazard zone limits, L&I does not intend the ergonomics rule to discourage well designed programs specifically established to improve physical conditioning and strength of employees. Therefore, weight training or conditioning programs that are operated properly in accordance with American College of Sports Medicine (ACSM), National Strength and Conditioning Association (NSCA), American Council on Exercise (ACE), or YMCA guidelines will not generally be considered violations of the ergonomics rule.

While the lifting limits would not be applied to employees who are doing physical training, those limits would apply to an employee working in a fitness center who is responsible for moving or putting away equipment. Therefore, fitness centers may need to evaluate the work being performed by their employees.